Remarks

By the foregoing Amendment, claims 1-5, 7-13, and 19-21 are amended, and claims 6, 18, 22-28, 30-59 are cancelled. No new matter is added by this Amendment. Support for this amendment is found throughout the specification, and particularly, at page 3, the bottom of page 6, and the 1st full paragraph of page 10. Entry of the Amendment, and favorable consideration thereof, is earnestly requested.

The Examiner has rejected independent claims 1, 23, and 30 under 35 U.S.C. §112, 1st paragraph as being indefinite. As explained below, claim 1 has been amended, and claims 23 and 30 have been cancelled, thereby obviating these rejections.

The Examiner has rejected independent claims 1, 23, and 30 under 35 U.S.C. 35 U.S.C. §103 as obvious over Schmitz ("MOVPE growth of InGaN on sapphire using growth initiation cycles") in view of Burmeister (U.S. Patent No. 3,617,371) and de Waard et al (U.S. Patent No. 6,373,033) or Stoddard et al (WO 98/35531). Independent Claim 1 has been amended to substantially correspond to the allowed independent claim in the related European case (see attached communication, for the Examiner's reference). Claims 23 and 30 have been cancelled.

Schmitz does not teach independent claim 1, as amended, because all of the elements in claim 1 are not disclosed or suggested by this reference. Specifically,

Schmitz does not disclose a temperature management system as claimed. Schmitz discusses the problem of adjusting a precise temperature profile inside the reaction chamber, and that management of the temperatures in the reactor is a very critical parameter set. However, Schmitz does not actually disclose a temperature management system, which controls the temperatures and the temporal variation of at least one of the temperatures using temperature variation profiles based on numerical simulations. Instead, Schmitz discloses simulations used to *construct* the reactor. In other words, the simulations allow one to understand and build a multiwafer MOVPE-reactor.

Schmitz does not disclose or fairly suggest the use of a temperature management system as described above to *run* a crystal growth process in the reactor. The present invention uses temperature variation profiles, which are calculated prior to the growth process, on the basis of the simulations. This is very different from the simulations of Schmitz, which are "steady state calculations" (stable temperatures), which are time-independent.

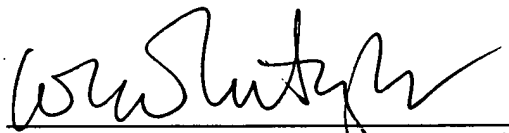
The calculations of the present invention, on the other hand, produce the "temperature variation profiles," which makes it possible to predict the change of a temperature during the change in time. These temporal temperature variations change the growth conditions inside the reaction chamber, facilitating the growth of different layers onto each other at different growth temperatures or, even more significantly, to

grow a layer *while* changing the temperature during the growth of that layer. Schmitz does not teach or fairly suggest the use of such a temperature management system.

Moreover, Schmitz does not disclose using such a temperature management system to specifically control the temperatures of the gas outlet, T_5, the second wafer support T_4, and the first wafer support, T_3 such that the gas outlet, T_5 is less than the temperature of the second wafer support, T_4, and the temperature of the second wafer support, T_4, is less than the temperature of the first wafer support, T_3. Even further, it does not disclose making the temperature adjustments by active heating, thermal radiation, and cooling.

It is respectfully submitted that claims 1-5, 7-13, and 19-21, all of the claims remaining in the application, are in order for allowance, and early notice to that effect is respectfully requested.

Respectfully submitted,



Wesley W. Whitmyer, Jr., Registration No. 33,558
David W. Aldrich, Registration No. 51,159
Attorney for Applicants
ST.ONGE STEWARD JOHNSTON & REENS LLC
986 Bedford Street
Stamford, CT 06905-5619
203 324-6155